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FORMERLY

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THE KOPPERS COMPANY

Designers and Builders of

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PROPERTIES EXAMINED

ENGINEERING REPORTS AND
FINANCIAL STATEMENTS PREPARED

COALS ANALYZED AND TESTED

THE KOPPERS COMPANY

PITTSBURGH, PA.

INDEX TO CONTENTS, PAGE 125 ADVERTISERS' INDEX, PAGE 24

What Does a Gas Company Benefit by Installing Storage Instead of Instantaneous Water Heaters?

EXAMPLE No. 1

100 instantaneous water heaters require 100 20-light gas meters at $30 apiece—30 × 100 = ...	$3,000.00
100 Kompak storage water heaters require no meters. Kompaks burn only from 45 to 50 feet of gas per hour and can be connected to the small gas meter already in use.....	0
REPRESENTING A SAVING OF -	**$3,000.00**

A gas main of 500 per minute capacity will accommodate - - - - - -

EXAMPLE No. 2

800 No. 32 Kompak storage water heaters (a Kompak requires ¾ of a foot of gas per minute). The gas revenue per year from 800 Kompaks at $3 each per month will be 3 × 12 × 800 = ...	$28,800.00
100 No. 6 instantaneous water heaters (6 feet per minute each). The gas revenue per year from 100 instantaneous water heaters at $3 each per month will be 3 × 12 × 100 = ...	3,600.00
AN INCREASE IN REVENUE OF	**$25,200.00**

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Manufactured by

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New Brunswick N. J.

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Manufactured Gas Process of Extracting Oil from Shale Results in Maximum Yield of Oil and the By-Product, Sulphate of Ammonia

Shale Oil Under This Process Results in High Yield of Gasoline, Lubricating Oil and High Melting Point Paraffin

By E. G. CHURCH

The application of manufactured gas fuel for extracting oil from shale, which has been described in former issues of the AMERICAN GAS ENGINEERING JOURNAL, in addition to proving to be by far the most convenient and the cheapest fuel for extracting oil from shale, has resulted in the added advantages of an increased production of oil and by-products. This is true both as to volume of production and per dollar invested.

Another important discovery that has been made in relation to the application of the manufactured gas fuel to this industry is that the quality of the oil when produced by this process, in which it is a primary decomposition product, is superior in a great many ways to oil produced from shale where secondary reactions are allowed to take place. Further, the time required to decompose the shale and produce the oil from it is hardly one-sixth of the time required when secondary reactions take place. This is because no heat has been wasted in bringing about secondary decomposition reactions.

CAUSES OF INCREASED OIL PRODUCTION BY MANUFACTURED GAS PROCESS

The increased production of oil and other by-products from this process is due to two causes, namely, an increase in the degree of heat transferred into the raw shale in the retort, or oven, caused by withdrawing the gases, and other volatile products, in a parallel direction with the course of the heat instead of counter to the heat current. When the gases are withdrawn inwardly they assist the passage of the heat waves, or currents, toward the interior of the retort, whereas, when the gases and other volatile products pass outwardly, counter to the currents of heat traveling inwardly, the volatile products actually resist and hinder the transfer of heat into the raw shale. Further, when the volatile products are withdrawn inwardly, in the same direction as the heat is traveling, a large amount of heat is given off by the volatile products in the form of convected heat to the cooler shale in the interior of the oven. By this we mean that if the temperature of primary decomposition is 750 deg. Fahr., then the volatile products formed must be at a temperature of 750 deg. Fahr. Withdrawing these volatile products through raw shale, which has attained an average temperature of, we will say for the sake of illustration, 300 deg. Fahr., the oils and other volatile products are going to be reduced in temperature from 750 deg. Fahr. to somewhere in the neighborhood of 300 deg. Fahr., and, of necessity, the heat formerly being carried by the volatile products is transferred to the raw shale. Every degree of heat transferred into the raw shale in this manner shortens the time of total carbonization.

OLD PROCESS OF RETORTING OIL SHALE IN COMPARISON

In retorting oil shale, regardless of where it is obtained, from Scotland or the United States—this applies also to coal or bitumens of any character—there is a chemical action that takes place. In Scotch practice, irrespective of the shale, the output in gallons of oil was practically the same. There is a reason for this. The heat that is transferred into the shale, bringing about the chemical decomposition, is utilized in a chemical reaction. The more hydrocarbon or bitumen in the shale to which heat is applied, the more heat required to bring about this chemical decomposition, and, under certain conditions, the greater length of time required to bring about the decomposition.

In other words, the decomposition of oil shale is a chemical reaction and the more oil that is producible,

the greater the reaction and the greater the amount of heat required. This accounts for the fact that a unit plant will yield approximately the same amount of oil per day, irrespective of the through-put in tons of shale.

In studying decomposition reactions, it has been determined that when decomposition of shale by heat takes place, there is an immediate rearrangement of the elements in the form of new compounds, which, broadly stated, are capable of existing at the higher temperature. This is termed the primary decomposition of the shale. A certain definite amount of heat is required to bring about this primary decomposition, no less will do. There must be available enough heat to bring about decomposition of the shale. There results from this primary decomposition a long chain of hydrocarbons from gases to heavy oils.

Under ordinary conditions of retorting, the primary decomposition products are subjected to a high degree of temperature for a relatively long period of time. The result of the prolonged heat treatment is a secondary decomposition, resulting in the formation of oils of a somewhat different character, increasing the proportion of unsaturated hydrocarbons, as well as the quantity of permanent gases, and decreasing the quantity of condensable oil.

Content and Uses of Shale Oil

The oil produced from oil shale contains virtually every component of ground petroleum, the main distinction being that the shale oil contains a certain amount of unsaturated hydrocarbons which must be removed in refining, otherwise the refinery procedure is the same as that used in refining ground petroleum and differs only in degree.

The oil recovered from the shale can be most profitably converted into gasoline at present because gasoline is the commodity most in demand to-day. This gasoline has much lower boiling point than the gasoline produced from underground petroleum, yet at the same time it weighs approximately four-tenths of a pound more per gallon than the gasoline produced from underground petroleum. In fact, one gallon of gasoline from petroleum oil produces approximately 126,000 heating units, while a gallon of shale oil gasoline will produce 134,000 heating units. This means that the shale gasoline will have a materially increased amount of power per gallon and at the same time, due to its low boiling point, will ignite with greater ease and give a much more powerful explosion.

Sulphate of Ammonia Recovery

Important among the results obtained from the manufactured gas process invented by G. W. Wallace, superintendent of the St. Clair County Gas & Electric Company, of Illinois, is the recovery of sulphate of ammonia. The process of carbonization furnishes the ideal conditions to recover the maximum yield of sulphate of ammonia, as well as the maximum yield of oil. From each ton of shale there will be produced without reducing the capacity of the shale oil plant, in the neighborhood of 20 pounds of sulphate of ammonia, which is of great value as a fertilizer in increasing the fertility of farm land. Any increase in the production of this commodity will add greatly to the agricultural wealth of the country.

Ammonia exists in the shale in the form of complex organic bodies, which, when heated, decomposes. The products of decomposition are other ammonium, capable of existing at the higher temperature. Both volatile and non-volatile ammonium products are formed in Mr. Wallace's process. If the volatile products are subjected to an increased temperature, as in the old methods, they undergo further decomposition with the ultimate formation of free nitrogen.

The nitrogen compounds in shale decompounds at a temperature of about 735 deg. Fahr., and this temperature is the most favorable for the formation of ammonia, and if immediately removed without subjection to a higher temperature, the maximum yield of ammonia will be obtained.

The following table indicates the manner in which ammonia decomposes when heated. The results were obtained by Remsey and Young by passing ammonia slowly through an iron tube filled with the broken bits of porcelain.

Temperature, Deg. Fahr.	Percentage of Ammonia Decomposed.
940 980	4.15
1,105	34.44
1,160	45.43
1,250	66.57
1,350	93.30
1,440	100.00

Thus we see that the decomposition begins a little below 940 deg. Fahr., and if it were not for retarding influences, such as the dilution with gases having a greater influence, all of the ammonia from the distillation of the shale would be converted into hydrogen and nitrogen.

The nitrogen products remaining in the spent shale can, in a measure, be converted into ammonia if steam is passed through the incandescent spent shale. The following table indicates the distribution of the nitrogen products in the Wallace Process, from Colorado and Utah oil shales, as compared to Scotch shales and practice:

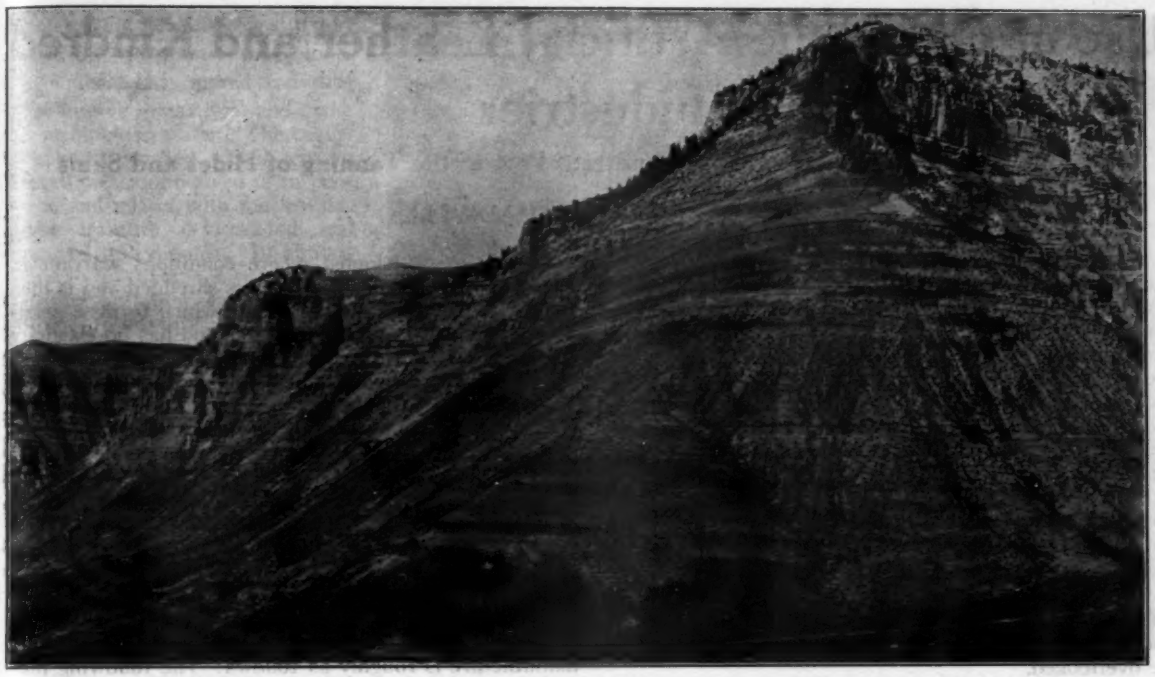
Scotch Shale

	Per Cent of Nitrogen.
As ammonia in watery distillates	17
In the oil as alkaloidal tars	20.4
In the spent shale	62.6

Colorado Shale

	Per Cent of Nitrogen.
As ammonia in watery distillates	57.1
In the oil as alkaloidal tars	11.2
In the spent shale	31.7

As secondary decomposition of the volatile products, resulting from the primary decomposition of the shale, does not take place in the Wallace process, and as the percentage of nitrogen remaining in the spent shale is low, it is not necessary to use steam in order to secure the maximum yield of ammonia.



A SOLID MOUNTAIN OF SHALE

Other By-Products

When the industry becomes firmly established in this country, it is certain that the shale oil refineries will produce large quantities of very valuable lubricating oils as well as the other products now produced from petroleum. Tests which have been made on shale lubricating oils by the U. S. Bureau of Standards show that shale oil, having the same physical constance as the underground petroleum lubricating oil, has much superior lubricating qualities.

From each barrel of shale oil approximately 25 pounds of very high melting point paraffin is obtained. High melting point paraffin is in demand commercially, as virtually all the paraffin produced from underground petroleum has a relatively low melting point. High melting point paraffin will compete with Ozokorite in insulating electrical apparatus.

Present Condition of Petroleum Industry

The present condition of the petroleum industry in the United States warrants the belief that the shale oil industry will in the next few years develop into one of the greatest industries of this country, basing this upon the fact that although tremendous wells and great gushers have been discovered, the great Burkburnett fields with seven million barrels production and the Ranger field with twelve million barrels production, yet it must be recognized that even though there are a quarter of a million oil wells in the country, yet the average daily production is only four and one-half barrels per well and that the demand for petroleum is far in excess of the supply. The U. S. Geological Survey in a recent report has stated that 40 per cent of the underground oil reserve is exhausted.

In the three years preceding 1918, 26,000,000 barrels of petroleum were drawn from supplies to meet the demand. In the years 1917-1918, 25,000,000 barrels were taken out. This simply means, if we look the situation squarely in the face, that the summit of our underground oil production has been reached and we are now on the down grade with regard to supplying our needs of petroleum and its products from wells. Accompanying this is a gradual increase in the price of crude oil at the wells, and it may be expected that the men of vision, instead of looking to see what is going to happen in the near future, will turn their interest to the great reserve of petroleum oil locked up in the mountains of oil-bearing shale located in extensive deposits in Colorado, Utah, Wyoming, Nevada, Montana and California. In fact, almost every country somewhere has its vast deposit of oil shale.

In Scotland the industry has reached great proportions and has been carried on for nearly 100 years. In that country it is probably not only the greatest but the most profitable industry.

Gas-Cleaning Apparatus

According to an English patent, 132,586, by A. J. Liversedge and W. B. Davidson, a centrifugal gas-cleaning appliance is fitted with vanes bent at the tips in such a way that channel-shaped gutters are formed at their outer ends. The tarry matters in the gas are forced outwards by centrifugal action, and are caught in these gutters which are so shaped that the tar is collected at one end and discharged into a main collecting gutter. The tar is not thrown against the wall of the container and so is not carried on again by the gas. Arrangements are also made for the projection of a steam of water or steam to meet the gas as it flows through the cleaner.

Use of Gas in the Artificial Leather and Kindred Industries

Various Uses for Heat—Gas plays Important Part in the Tanning of Hides and Skins

By GILBERT C. SHADWELL

It would be incorrect to assume that gas is used extensively in the main operations involved in the leather industry because such is far from being the case. Gas as a fuel, however, has many and varied uses in the byways of this vast business, and it is believed that industrial men will find the subject one of interest. The chief avenues through which consideration of this subject will be divided are those of artificial leather for soles and heels as well as for such uses as lithographers' rollers, leather boards for various purposes; also the manufacture of preparations for the preservation of leather together with a discussion of the use of gas in the treatment of skins, hides and the like.

With leather goods mounting in price these branches of the industry will come in for some attention and indirectly prove a field for gas men which should not be overlooked.

So far as the gas-burning equipments are concerned these will have to be left largely to the individual ideas of the industrial man, and suggestions only will be offered owing to the wide range of conditions pertaining in the different localities where work of this nature is carried on.

Artificial Leather

Considering firstly the subject of artificial leather there are several courses adopted at the present time. Generally speaking, the use of leather scraps is a basis of manufacture, however, and one of the methods is as follows: The leather scraps are first steeped in weak lime water and then ground fine in ordinary rag engines as used by paper makers. The leather is then mixed with about one-half of good manilla rope colored with Venetian red, and is now ready to be made into either leather board, shoe shanks, heels or stiffenings for heels and toes. The boards are made on an ordinary cylinder board somewhat similar to the paper machine, and can be made up to one-half an inch thick and more. The shoe shanks are stamped to the proper shape and size on two machines and then dried. The stiffenings and toes are cut by a machine and formed to shape and size by another machine and dried. Gas heat can be used conveniently under the tanks in which this work is carried out and only a very gentle heat is requisite. Also an air heater, heated by gas, together with the necessary blower, will be found first rate for carrying out the drying operations.

These leather parts have to dry slowly in any event and if stored away in open bins in such a way that hot air can readily circulate around them, the air ducts can be set lengthwise along two opposite sides of the room and the air can be blown from the one to the other and thence discharged from the room.

An alternative method of artificial leather manufacture, sometimes adopted where conditions warrant it, is as follows: The leather scrap is shredded and is then mixed with strong liquid ammonia which forms a gelatinous mass. It is soluble in water and has no elasticity until it is mixed with rubber, dissolved in carbon disulphide and well kneaded, when it is also rendered waterproof.

It is then ready for putting into heel blocks or moulds. The proportions are seen in the following table:

Use.	Rubber.	Ammonia.	Leather.
For soles	25 parts	67 parts	67 parts
For heels	25 parts	80 parts	80 parts

In the opening section of this article, reference was made to artificial leather for lithographers' rollers. This is in itself quite an industry and the method of manufacture is roughly as follows: The following materials are used: Glue, 40 parts; saltpeter, 6 parts; sirup, 40 parts; sugar, 6 parts; water, 10 parts; chrome yellow, 2 parts; oil of almonds, 2 parts. These compounds are placed in a gas-fired cauldron furnace and melted together, being thoroughly mixed together. When melted, the composition is poured around a core about ½-inch less in diameter than the mould. When cold the product is taken from the mould and put for ten hours in a solution composed of 2 parts of water and 2 parts of potash. It is then dried. This is generally carried out in the open air, but as it takes four to five days to dry it would seem that a gas-fired air heater would be a far quicker proposition, besides making it possible to dry the rollers on damp days as well as when it is dry.

Leather Board

Dealing next with leather board, a very hard variety of board is manufactured of parts from leather clippings. The leather for this purpose is cut into small pieces like rag, reduced in the engine with about the same quantity of bagging and waste paper, and made into boards on a cylinder in the ordinary manner. The boards acquire the appearance, and to some extent the properties of leather. The material requires considerable time for washing and grinding, and size is unnecessary in its manufacture.

Among the imitation leathers manufactured some are partly composed of leather, while others have either no leather or practically no leather at all in their composition. Among the former may be given the following: This imitation leather is prepared from leather waste and caoutchouc. The leather is first freed from all foreign substances, then by machinery converted into a fibrous homogeneous material. Then it is treated with ammoniacal liquor. This forms a gelatinous compound which may be poured in moulds or rolled into

plates. This compound is stiff and hard but not elastic and soluble in water. It is mixed and rubber to give it elasticity and make it insoluble in water. The caoutchouc is washed, dried, cut in small pieces, dissolved in turpentine and mixed with the leather. The mixture is kneaded and poured into moulds. In opposition to this arrangement the non-leather imitation is made as follows: A mixture is made of 16 parts of gelatine and 5 parts of glycerine. This is mixed together in a cauldron gas furnace, preferably of the water-jacketed type. A coloring matter is then added as may be required, rubber to give elasticity, and then boiled linseed oil to render the whole sufficiently flexible. This composition is then heated up to a temperature sufficient to cause it to flow fairly readily and it is then spread while hot upon linen, printed with any pattern desired. The surface is then treated with a solution of alum, sulphate of iron, copper or zinc. These saline solutions may likewise be mixed with the composition before it is spread on the linen. The surface is lastly varnished and may be bronzed or gilded. Another composition is obtained by boiling linseed oil with quicklime and borax which forms a liquid that, on cooling becomes a thick paste. It is then mixed with rasped cork and more quicklime.

FIG. 1.—PAPER MACHINE USED IN THE MAKING OF LEATHER BOARD

It is of interest to note that gas is used in the hardening of leather. The process is briefly as follows: A bath is made up consisting of slaked lime, 10 pounds; sal soda, 40 pounds, and water, 10 gallons. This is placed in a tank or cauldron furnace and boiled. The gas is then turned out and the liquid allowed to cool. When it is cold there are added 10 pounds of slaked lime and 10 gallons of water. The leather is put into this for three days and then removed, after which it is put into a bath of 18 pounds of slaked lime and 9 gallons of water and left to soak for two days in summer and for three or even four days in winter. When taken out of this it is passed into a tank furnace containing water heated to about 180 deg. Fahr. and then passed between heavily weighted rollers.

Although hardly an artificial leather, yet patent leather requires treatment in covering the cracks very often, in which process gas is used by at least one manufacturer known to the writer. A few words may be therefore devoted to this phase of the subject.

A small cauldron furnace is used and into the kettle are placed the following compounds in the proportions indicated: Ten pounds molasses or sugar, 20 ounces of gum arabic, 40 pounds of ivory black. There are thoroughly boiled together, after which the gas is turned out and the product allowed to cool. This material is then bottled for the market. It is said to be an excellent reviver and may be used as a blackening in the ordinary way, no brushes for polishing being required.

The first coats of the japan for patent leather are made with linseed oil and Prussian blue, boiled together for some hours, the last coat of varnish with linseed oil and lampblack similarly boiled. Each coat is separately dried at a temperature of 160 to 180 deg. Fahr. and rubbed on the leather by hand, the skin being nailed onto the surface of a board. As the process is a very delicate one and requires special knowledge in each part of the operation, it would be useless for anyone to attempt to produce japanned leather, except as an experiment, for his own amusement, without serving an apprenticeship to the trade.

Preservatives

A paste is made for preserving the gloss of patent leather and to prevent it from cracking and is made as follows: A cauldron furnace is again used and into it are placed some wax with a little oil of turpentine mixed at the time it is melted. When the gas has been turned out and it has cooled down, it should be a thick paste. Vaseline is excellent. It should be allowed to remain one-half hour, after which it is dried with canton flannel. Referring to the use of gas in the direct preservation of leather we will first consider leather preservatives that are waterproof. One which is made of beeswax, 18 parts; spermaceti, 6 parts; oil turpentine, 66 parts; asphalt varnish, 5 parts; borax powder, 1 part; vine twig (black), 5 parts; Prussian blue, 2 parts; nitro benzol, 1 part.

The wax is first melted in the cauldron furnace, after which is added the powdered borax. This is then stirred till a kind of jelly has formed. In another kettle or cauldron furnace spermaceti is melted. The asphalt varnish is added previously mixed with the oil of turpentine. This is added to the wax. Lastly the color is added, having been previously rubbed smooth with a little of the mass. It is perfumed with the nitro benzol and poured into boxes. In its uses it is ap-

plied in small quantities, wiped with a cloth and brushed. It needs to be used only once a week.

A more common form of leather preservatives are made up as follows: Equal parts of mutton fat and linseed oil are mixed with one-tenth of their weight of Venice turpentine and melted together in a cauldron furnace provided with a tinned, copper, galvanized, iron or enameled iron kettle. This makes what is technically known as a dubbing which is very efficacious in preserving leather when exposed to wet or snow, etc. It should be applied when the leather is quite dry and warm.

Among the "cold" ingredients there is, of course, nothing like castor oil for preserving leather, but this also forms the basis of a number of compounds which the gas man will run up against. When applied once a month or once or twice a week in snowy weather it not only makes the leather soft but keeps it waterproof. Copal varnish is the best thing to apply to the soles, but they should be thoroughly roughed on the surface before applying the varnish. Linseed oil is said to be good, but it appears to have a tendency to rot the leather. That appears to be the only objection to dubbings and other mixups of mutton, suet, linseed oil, etc.

It is said that the best thing for waterproofing soles is Szerelinej's liquid, three or four coats of this render the sole perfectly waterproof and more durable. With regard to castor oil it may further be said that it does not prevent a polish being produced on the boots or shoes, and that leather so treated is avoided by rats, even if its proportion be only one-third to two-thirds tallow.

Long continued observation shows that harness and other leather exposed to the action of ammonia continually given off in stables, become weak and rotten sooner than ordinary leather. Even when care is taken to protect them with grease, this takes place. The addition of a small quantity of glycerin to the oil or fat employed in greasing such kind of leather has been recommended to keep it always pliable and soft.

Tanning

We now come to the functions of gas in the tanning of leather and of skins. In order to tan or taw skins with the hair on for rugs and other uses they have to be first of all washed thoroughly in order to remove all fleshy matter from the inner surface. After this the hair or fur is carefully cleaned with soap and warm water. If much of this is done it is desirable to install an automatic gas-fired water heater. The skin should be thoroughly well rinsed after washing. The next process consists in making up a paste of the following material, which can be done very conveniently in a small cauldron furnace or in a suitable kettle or pot placed in an industrial stove. The materials consist of: One pound each of common salt and ground alum and 2 ounces of borax. These should be added to the kettle after it has been filled with about 1 gallon of water and allowed to boil. Sufficient rye meal should then be added to make a thick paste which is then spread on the flesh side of the skin. The skin is then folded lengthwise (flesh side in), the skin being quite moist. It is now allowed to remain for ten to fourteen days in an airy and shady place. After this it is shaken out in order to remove the paste from the surface, after which it is washed and dried. The dry room can conveniently be of the construction well known to gas men and an air heater and blower installed. The drying, however, must be relatively slow and the temperature not much above 80 or 90 deg. Fahr. For a heavy skin a second application of the salt and alum may be needed. Afterwards it is necessary to pull and stretch the skin with the hands or over a beam and work on the flesh side with a blunt knife. The tanning of fur skins is carried out somewhat differently. After cutting off the useless parts and softening the skins by soaking in warm water the fatty parts are taken away from the inside. After this the skins are usually placed in a tank full of tepid water, which may readily be heated by gas, for about two hours: Equal parts of borax, saltpeter and Glauber's salts (sodium sulphate) are mixed in the proportion of about one-third ounce of each for each skin with water in sufficient quantity to make just a thin "paste." This is spread with a brush over the inside of the skin so as to apply more to the thick parts than on the thinner. It is now doubled with the flesh side in as before and placed in a cool place. After standing twenty-four hours it is washed clean and the following mixture is applied in the same manner as before: One ounce sal soda, one-third ounce borax, 2 ounces hard white soap. These are melted slowly by the same heat application as before without being allowed to boil. After this the skin is folded together again just as before, put in a warm closet for twenty-four hours. After this they dissolve 3 ounces alum, 7 ounces salt, one-half ounce saleratus in sufficient hot distilled water to saturate the skin. When it is cooled down to about 110 deg. Fahr., the skin is soaked in it for twelve hours, wrung out and dried. It is then repeated two or three times till the skin is sufficiently soft; lastly the inside of the skin is smoothed with fine sandpaper and pumice stone.

With respect to hair skins which are to be tanned with the hair on there are several methods employed. Among them may be mentioned the following: The skin is stretched tightly and smoothly on a board, the hair side down and it is tacked by its edges to its place. The loose flesh and fat are scraped off by means of a blunt knife. Chalk is worked in freely with plenty of hard rubbing. When the chalk begins to powder and fall off the skin is removed from the board and plenty of powdered alum is rubbed in. It is then wrapped up as before and set in a dry room for a few days. By this means the skin will become pliable and retain its hair. An alternative method consists in making up the following solution: Soft water, 10 gallons; wheat bran, ½ bushel; salt, 7 pounds; sulphuric acid, 2½ pounds. These are dissolved together in the order given except that the acid must be added slowly to the water first of all and not the water to the acid or an explosion might occur due to the heat of chemical combination given off. When dissolved together the skins are placed in this solution and allowed to remain there twelve hours. They are then removed and cleaned well and again put in for another twelve hours or longer if need be. The skins are then taken out, well washed and put in a drying room. They can then be beaten soft if desired.

A third method consists of using two parts of saltpeter with one part of alum. This is mixed and

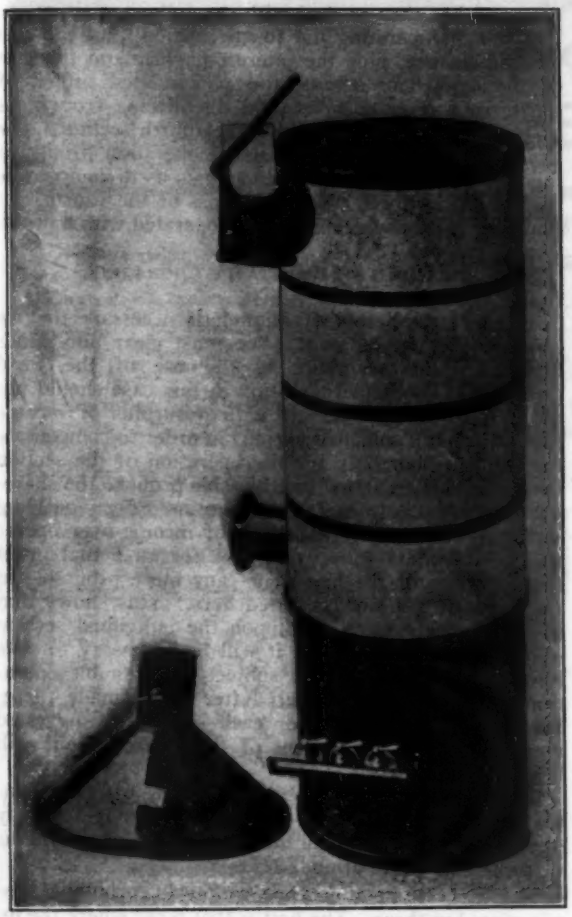


FIG. 2.—AIR HEATER USED IN DRYING ROOM

sprinkled uniformly on the flesh side. The skin is then rolled up and laid in a cool room for the purpose. It is then later spread out in the dry room to dry. The fat is scraped off and it is rubbed till it is thoroughly pliable. The drying can in every case be carried by means of an air heater as shown in Fig. 2.

The tanning of buckskin is carried out in a somewhat different manner. A skin either green or well soaked is then fleshed or scraped with a dull knife in the usual way already described. The skin is spread on a smooth board and grained by scraping with a sharp instrument. It is rubbed nearly dry over the oval end of a board held upright. At this point some tanners take the brains of a deer or a calf which they dry over a stove gently. These are then put in a cloth and boiled until soft, and the liquid is cooled off until it reaches about 100 deg. Fahr. with water sufficient to soak the skin in. It is soaked in this till quite soft and pliable and then wrung out dry. After this it is washed well with soap suds, rubbed dry and well smoked in a smokehouse. Instead of brains, oil or lard may be used and the skin soaked therein for six hours. This is called an Indian tan.

Important Points Gained by Exact Knowledge of Profitable Distribution Radius

By L. W. ALWYN-SCHMIDT

All rate making is based upon the theory that the greater gains of the gas plant in the immediate neighborhood of the plant will help to pay for the loss resulting from the supply of gas to districts of the distribution field, where the distribution becomes unprofitable. The rate assumes to be an average which should, however, favor the company sufficiently as to permit its operation without a loss. If, therefore, the business of the gas companies is based to so considerable an extent upon the existence of an average profit, it should be the duty of every gas plant to establish correctly, where the point is reached along every main, when gas distribution becomes unprofitable, and, further, where it turns into an actual loss. Very few gas enterprises in this country seem to have made an exact calculation of this feature of their organization.

Unfortunately there is no hard and fast rule by which the radius of profitable distribution can be established. It changes along every distributing line and it is subject not only to changes in the cost of production but also to the variations in the quantity of consumption along the line inside and outside the boundary of profitable distribution. In the following, an attempt will be made to lay down certain—but by no means complete—rules which should be applied for establishing this very important management factor.

First Steps to Be Taken

The first step to be taken is to separate carefully the various expense items determining the cost of production and distribution. To do this satisfactorily it will be necessary to divide the enterprise into two distinct undertakings, one of which makes the gas while the other one handles its distribution. It may be assumed that the producing section of the plant hands the gas to the distributing section at the exit of the principal meter of the plant. To establish the cost of making the gas is not very difficult. Every gas plant, in fact, knows exactly the manufacturing cost of each unit. This cost factor of course does not remain permanently the same. It is subject to changes in the cost of coal, of labor, of equipment, and many other supplementary factors, all known to the engineers of the plant and therefore easily established. This fundamental cost factor is the price of gas as theoretically sold to the distribution section of the plant. It forms the basic cost charge of the whole cost system.

Various Methods of Charging Distribution Cost in Use

The usual practice of establishing distribution cost is that of charging the cost of the whole pipe line to distribution and drawing an average of the total. To make an exact plan of distribution cost for the purpose of establishing a profitable distribution radius it is necessary that the different cost items be separated for each individual section of the main line. Say gas is distributed by the plant over four mains starting from the

plant, it will be necessary to deal with each of these individually. The principal cost item in this case must be the building and maintenance cost of the main line with all its branch sections and subdivisions. This item of equipment must also include the street lights and other lighting and distributing equipment owned by the company and not charged in one or the other manner to the consumer. The cost of this equipment to the company is the actual cost paid for equipment and laying the pipes. No deduction for deterioration should be made in this instance as the value of the equipment remains the same as long as it is kept effective. The annual interest payment on the value of the distributing equipment is the leading cost factor on the distributing end of the charge sheet. To pass the gas through these lines mile by mile costs an increasing amount of interest payment and operation cost.

It is this feature of the calculation which demands some special consideration. Let us assume that the line is only one mile long and that it is an absolutely new line laid to accommodate a number of customers near the plant. Such a line most likely would have to be constructed with a view for future business. It would, therefore, be a well-sized main line with a number of minor branch lines. It must depend from the number of customers along the line whether it lies inside the radius of profitable distribution or outside of it. If the cost of the gas, plus the interest on the cost of the equipment, plus the cost of maintenance, is less than the total business obtained from the distributors along the line, then the line is operated profitably. If it should prove the other way round this mile is operated at a loss.

Let us now assume that the line is extended another mile. What are cost conditions in this second mile section? For the first example we may take it for granted that the first mile section has paid operation cost and is operated with a reasonal profit. The second mile, therefore, starts with a clean sheet. It has to its debit an additional mile of main with all the side sections, which means the interest charge on the new mile, plus the cost of maintenance, plus the original cost of the gas. On the credit side there are the surplus profit of the operation of the first line and the takings from the sale of gas along that line. The case may very well happen that this second section has not a sufficient number of consumers to pay for the cost of operating, maintaining and supplying it with gas. It is then a question whether the surplus profit of the first mile section is large enough to balance the loss of the second mile section. If the second mile should be operated with a loss it must then be established at what point of the line the profitable distribution ends.

Conditions in Actual Practice

In actual practice conditions are mostly somewhat different. The large mains of the gas works are driven first into the populous districts. The first miles, therefore, are operated in nearly every case with a profit. Only when the less populated sections of the city are reached, the danger of unprofitable operation of the line begins. The example stands approximately as follows: Assumed that the first three sections of a longer main section are operated with a profit, the fourth section possibly will lead outside the city limits into a district with a few houses which, nevertheless, have to be supplied with gas under the charter of the company. The company has then to deal with the following situation: The cost of operating the fourth section, plus the cost of maintenance, plus the interest payment on the cost of the equipment against the accumulated profits of the three former sections, and the income from sales of gas to the consumers along the fourth section. The chances are that the accumulated operation profits of the earlier section are large enough so as to compensate the gas works for the operation loss of the fourth section and that the whole line is still operated with a profit.

Meaning of Profitable Operation

To understand this situation it is necessary to give some further explanation. We must clear our minds especially with reference to the use of the word profitable. Profitable operation in this case should not mean the operation merely with a surplus of income over cost, but a sufficient surplus in order to compensate the company not only for the operation of the section but to provide an actual distributable profit to the shareholders. If, therefore, the operation of an outlying section produces only a surplus of income over operation cost without to provide also for an actual profit the operation of the line is not any more profitable in the sense of the word as used here. This shows that in charging operation cost upon the individual section of the distribution system it will be necessary to take into consideration also the subject of profitable operation of the whole enterprise. After having made, therefore, a cost calculation for each section as suggested above, an equal adjustment of the desired profit will have to be made.

This requires a considerable amount of specialization of accounts and may be the principal reason why so many gas works do not take cognizance of the radius of profitable distribution.

There is, in fact, not one radius of profitable distribution, but three. The first is that point where the income from the total section becomes less than the expense of running the section. The second is that point where profitable and interest bearing operation ceases to become possible. The third is the point where expense exceeds profit inside the individual section.

For all ordinary purposes expense and takings along a distribution line must be treated cumulative. The line remains profitable in its whole length from the generating plant to the point where it still provides an income large enough to pay all charges and leave an interest-bearing profit for the total investment. This is the point which is best described as the radius of profitable distribution.

Sectional Treatment of Profitable Operation

A distinction, however, must be made between the profitable operation of the whole line and each section of it. The works must not only know what it costs to operate the whole, but what is the cost of distribution to practically any point along the line. As long as profits and cost are treated cumulative, both mount up and are equalizing each other from step to step. But this system of accounting does not show the earning abilities of each individual section and, therefore, does not give a clear impression of any likely weakness along the line. The sectional treatment, therefore, must be thoroughly

(*Continued on page* 127.)

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Contents of This Issue

MANUFACTURED GAS PROCESS OF EXTRACTING OIL FROM SHALE RESULTS IN MAXIMUM YIELD OF OIL AND THE BY-PRODUCT, SULPHATE OF AMMONIA—BY E. G. CHURCH 117

USE OF GAS IN THE ARTIFICIAL LEATHER AND KINDRED INDUSTRIES—BY GILBERT C. SHADWELL 120

IMPORTANT POINTS GAINED BY EXACT KNOWLEDGE OF PROFITABLE DISTRIBUTION RADIUS—BY L. W. ALWYN-SCHMIDT 123

EDITORIALS 125

FROM THE JOURNAL SIXTY YEARS AGO 127

MERCHANDISING GAS—
SELLING LIGHTING EFFECTS 128
ONE WAY FOR GAS COMPANIES TO INCREASE EARNINGS—BY J. E. BULLARD 131

PATENTS PERTINENT TO GAS INDUSTRY 133

NEWS OF THE GAS INDUSTRY 134

CONSTRUCTION NOTES 18

As the Journal Views It

A Dominant Chord

J. E. Bullard in his article on the need of gas companies developing strong sales and strong advertising departments, printed in the Merchandising Section of this issue, strikes a dominant chord.

There are many good reasons for the maintenance of strong sales and strong advertising departments in gas companies, but if there were no other than this one described, this would be a sufficient reason.

As Mr. Bullard points out, a strong sales and strong advertising department will accomplish more than merely selling gas ranges—it will sell the service the company is rendering and demonstrate the value of the service and the cost of it to a degree that the public will be *willing* to pay rates that will yield a profit.

Expenses of gas companies are not in proportion to the amount of gas consumed. The greatest expense to the gas company is the expense of always being there every moment of the twenty-four hours ready to serve the consumer. This service, as well as being the most costly to the gas company, is also the most valuable one from the consumer's standpoint, but he never for a moment thinks of it, or realizes what it costs. Everyone is willing to pay for value received when they *know* the value they are receiving.

Gas Outlets

Spring is almost here, builders are busy and soon the new spring houses will be shooting up all around as fast as the flowers. With them, or rather before them, comes the question of gas outlets to be put before the architects and builders. No opportunity should be missed to see to it that there are extra outlets put in

living rooms for portables, outlets in the laundry, extra outlets in the bathroom for the baby's food warmer and for the curling iron and extra outlets in the kitchen for the iron.

One of our friends told us just the other day how chagrined he was recently when it cost him $24 for installing extra gas piping and outlets in his house that should have been put there when it was built. This is a matter for the gas company salesman's conscience.

Wherever there is an outlet there will be a use found for consuming gas. Let us look to the outlet business.

Wake Up, Ye Domestic Fuel Men

Not so many years ago we commenced to think of gas fuel for industry. And the thought was followed by definite and determined efforts. Those definite efforts are to-day well rewarded. Gas fuel is becoming the recognized perfect fuel from all standpoints of efficiency and economy, and we have every reason to be proud of this achievement.

The place that gas fuel holds to-day in industry is without a question of a doubt due to the alertness, the energy and wide-awakeness of the men of the industrial fuel department.

Now that the commercial department in its dealings with domestic problems and uses for gas has made the gas range and hot water heater household necessities to their rightful places in the home, and has this business running a good deal on its own momentum, it is time this department took on new life and an undeveloped interest. An undeveloped interest will not be hard to find, for the domestic field has only been scratched.

Without the effort of even a single thought, one tremendously important undeveloped interest for the domestic field springs up boldly before us. Its name is House-Heating.

If we, in the gas industry, do not watch ourselves and get on a swift gait, the electrical man will get there first. He is attempting to invade the range business, and with some success, notwithstanding the fact that he hasn't a ghost of a chance against gas in its superiority applied to the culinary art. But the electrical man stops at nothing. He manages always somehow to push aside his obstacles.

For instance, we have it from Henry L. Doherty, a leader and chief in our industry. This is what he says: "In my opinion there has never been a time when we could not have carried gas from a coal mine to a city more economically and reliably as a power proposition, together with its use as a fuel, than can be done with an electric transmission line, *yet with all of the handicaps that the electrical engineers had with the difficulties of making a reliable electric transmission system,* WE HAVE DONE NOTHING OF THIS SORT, AND THE ELECTRICAL MEN HAVE DONE WHAT SEEMED AT FIRST ALMOST IMPOSSIBLE *in actual practical results, a very successful affair.*"

Are we, in the gas industry, going to let the electrical man invade the house-heating field, when we are the logical ones to do the work? Surely, we have too much pride of achievement for that.

But the electrical man will be blazing his trail there as sure as gun's iron, if we don't hurry up and get after that house-heating business.

Now is the time that plans are being filed for new construction by architects and builders, many of whom are not familiar with the possibilities of gas for house-heating. If we get in touch with these people now we shall be sure to reap the benefits by fall.

A Comparison

We went on a visiting trip the other day to see some gas company appliance salesrooms. We saw fine displays of gas ranges, space heaters and hot water heaters, and a fair display of portable lamps and fixtures. But we saw no displays of laundry apparatus and in one display room we only saw one gas iron. It was on a table that was off in a corner on which there were three or four other small appliances.

Perhaps we were in a critical frame of mind. However, we felt an absence of enthusiasm for pushing the sale of gas appliances in the gas appliance salesrooms we visited.

Next door our electrical brother had his display room. We stepped in to see how his looked. There was the usual elaborate display of lamps and fixtures and a wealth of toasters, percolators and such other appliances on which the electrical brother has the corner. In addition to these he had a small space set off for a family laundry apparatus. It contained two stationary tubs, a washing machine and an ironing machine. A neat, trim young woman was operating the ironing machine. As we looked at it we wondered what had become of the laundry appliances in the gas company's display.

Further, in the electrical showroom, there was not only a whole case full of irons displayed, but there were irons everywhere, placed attractively all around the big room. In the gas appliance display room the one poor little gas iron looked lonesome and forlorn. No wonder the electrical brother sells so many irons. He pushes his iron with enthusiasm. He's not ashamed of it. And the gas iron has many advantages over the electrical iron. We have heard women claim that the gas iron is more convenient to handle. Besides that, everyone knows that it costs much less to operate a gas iron.

What is the explanation for the lack of enthusiasm we felt in the gas company's appliance display room?

We think perhaps we sounded it when we talked to the salesman.

"How is it, for instance, there are not more small domestic gas appliances for sale, like there are electric ones"? we asked.

"Well, there's not the call for them," was the lackadaisical reply.

"Why don't you make the call for them?" we said testily.

"Why should we? there's all the electric appliances!"

"Well, if for no other reason," we persisted, "why, then, for the sake of competition."

To this we were told that the gas and electric companies were all one and that therefore there was no need of competition!

It is our contention that there is need of competition. Electrical appliances do not sell gas service.

Small gas appliances meeting this need and that need in the home just use up that much more gas little by little. This little multiplied by a hundred homes equals one hundred times as much gas consumed.

On the other hand, there's the profit on each sale to be considered. Even if it is only a small profit, repeated on a hundred sales it becomes a factor in aiding the commercial department to become an important factor in filling in the valley made by the need of an adequate rate.

Important Points Gained by Exact Knowledge of Profitable Distribution Radius

(*Continued from page* 124.)

recommended. It is supposed that a line is operated successfully when each section makes individually a profit. But a situation may arise where the main line is led through a district that does not pay by itself, but where the line is maintained for the purpose of feeding another better paying section further along. This line pays only partly, and the better paying sections have to make up the loss for the losing section.

The effect of such a situation upon the whole system is very considerable and may be of material bearing upon the commercial rentability of the whole works, especially if such non-paying sections should appear along several mains encircling the gas work and separating it from its most profitable field of distribution.

To make the establishment of a radius of profitable distribution, therefore, really useful, it is necessary to make the individual sections not too long. A certain number of blocks should be included into every section and a mechanical measuring unit is mostly better for purposes of comparison than a reasoned partition on the basis of local conditions. If such a reasoned geographical division is required for a special investigation it is better to make it up with the aid of the measured standard sections which is easily done by uniting the results of a number of subsections to one main section.

Uses of Analysis of Distribution Cost

Of what use now will be the knowledge gained by a study of the results of such an analysis of distribution cost? It will show managers of the plant first, in which districts the company operates with a profit and where it is losing. This knowledge by itself will be advantageous because it will permit a correction of the company's sales policies.

Such correction may be attempted in several ways. It has been pointed out already that the loss of an earlier section of the main line may sometimes be eradicated by the greater gains of a future section. If it is known, therefore, to the managers that one particular section of the distributing line does not earn sufficient to make its operation paying, it will become possible to link up this section with another one promising greater earnings and by doing so increase the profits on one side and relieve pressure upon the well earning other main in the neighborhood. So, for instance, an important but not very profitable main line may be made profitable by carrying it further out until it reaches a sound field of distribution.

Very good use also can be made of the knowledge gained in this manner in the construction of other main lines and additions to the existing system. Suppose a distributing line has reached the point where its further profitable operation becomes more or less doubtful. The gas works are supposed to lead the development of the city and to encourage it by supplying to outlying districts gas for power and light. The service is required, but its character is left to the expert opinion of the gas managers. The problem in such instances is always: What kind of service can the gas plant render to the district, and what preparation must be made to supply all the present wants of the neighborhood and to provide also for likely increases? Not much is gained by a knowledge of the cost of one mile of the whole system. It is the cost of the identical mile which is under consideration and its influence upon the rentability of the former sections of the line of which it is going to form a part. Knowing exactly the cost of the gas to the company at the point where the new extension has to be made it is easy for the directors to estimate the approximate profit that may be derived from the new line. It will then be possible to establish with some correctness what sort of pipe line, what additional service lines, and what other equipment the district will stand to remain inside the radius of profitable distribution.

The most important point gained, however, is the exact knowledge of the very important fact of how many consumers of the gas plant are served inside the radius of profitable distribution and how many outside. Is the average rate as existing in that particular city justified or does it operate against the interests of the company?

From the Journal 60 Years Ago

A superintendent of gas works with a *perfect* knowledge of their operations, and a practical gas fitter is wanted in a healthy Illinois town where *board is $10 to $15 a month*. Also one is wanted who will be willing to work negroes as assistants and is without conscientious scruples with regard to slavery.

R. D. Wood & Co., manufacturers of cast-iron gas pipe, retorts, lamp ports, etc., is an advertiser.

Selling Lighting Effects

Precede the Sale of Fixtures by an Actual Demonstration of Lighting Effects and Win the Customer's Confidence in Your Understanding of and Interest in the Problem of Lighting the Customer's Home

In general, lighting fixtures are a "means to an end" and the consumer should be acquainted with the wonderful possibilities of *lighting effects*. Light is a medium which operates much in the same manner as so-called decoration in interiors to create various moods and settings, but light has tremendous advantages over other media owing to its mobility—that is, different effects may be obtained in the same room by proper control of various circuits and accessories. This applies to a large variety of interiors, but let us confine the discussion to home lighting. This is a story told by M. Luckiesh, in Electrical Merchandising, of how lighting sales have been increased by artistic and effective demonstration.

The householder is dependent upon the contractor, the architect, or his own ingenuity for the ideas and placement of his lights, and upon the fixture dealer for fixtures. Piping should be adequate, and outlets should be plentiful if the householder is to enjoy the possibilities of lighting. But the average householder learns little about the potentiality of lighting from contact with the contractor, architect or fixture dealer.

Buying Fixtures Instead of Effects

He goes to the fixture store to light his home and is generally shown and sold *fixtures*. Little or no emphasis is placed upon *effects*. Few fixture salesmen understand the extensive inherent possibilities of lighting. The householder is shown this fixture and that one amid a maze of fixtures under crowded conditions in which lighting effects cannot be demonstrated even though by chance the attention of the salesman or householder happened to be directed toward effects. Little or no connection is maintained between the effects produced by fixtures displayed and the decorative scheme of the householder's rooms. The net result is that the fixture dealer sells the householder objects fabricated from metal, glass, etc., and to all intents and purposes these fixtures have no excuse for existence but their own appearance. Even in the buying of furniture, appropriateness is usually considered, either wisely or unwisely, but seldom is this true of *lighting effects*.

Is it strange that the householder—the oldest consumer of lighting—is indifferent to the possibilities of lighting? Is it strange that he complains of lighting bills notwithstanding the fact that they cost him no more than the cream in his coffee for breakfast? Is it strange that he does not appreciate that artificial lighting ranks next in importance to roof and artificial heat? Is it strange that he visualizes a decorative lamp or bracket as adding to his lighting bill and does not consider that a picture on the wall costs him anything after it is paid for and hung?

The householder spends a great deal more in an attempt to beautify his interiors than is necessary in making them merely physically comfortable. He often spends more for draperies in a single room than he does for fixtures in the entire house. Why is there this difference in attitude? A few small fixtures in a room by virtue of their appearance alone cannot compete with draperies of much larger areas in appealing to the eye. But lighting effects from appropriate fixtures dominate the room and they *can* compete with other furnishings, provided that the householder is educated to the point of obtaining and observing appropriate lighting effects. The decorator and furnisher have educated him to appraise their efforts and goods from the standpoint of effect. The conclusion again is to sell lighting effects and to sell them on that more important and appealing basis, namely, the artistic, or more broadly, the psychological basis rather than on the utilitarian basis or on the mere appeal of fixtures themselves.

Lighting effects must be shown to the householder; they cannot be adequately and forcibly described. Anyone who has tried these two methods—demonstration and description—knows this to be true.

Then, to come to the point, let us precede the selling of fixtures by actual demonstration of effects. Let us show what can be done in our demonstration room and in the customer's rooms. Let us make the lighting of homes partially a studio proposition. A demonstration room will open the eyes of the customer and will convince him that the dealer using it understands lighting effects and is interested in lighting his (the customer's) home. If this could precede the piping of the home the results would be still better.

A Section to Demonstrate Effects

In brief, suppose the present fixture display room is divided into three parts. One of these is made into a demonstration room for light-

ing effects, and not fixtures. Here the customer is shown the expressiveness of lighting as obtained by various means, and, in the meantime, general details pertaining to the customer's home are obtained. The customer's interest will be aroused, his purse will be opened more generously for lighting appropriations, and this additional expenditure will prove to be an investment upon which he will realize large returns throughout his sojourn in his home. The salesman in this manner will inspire confidence and his ability will be paid for as it should be.

The next third is a similar room without the elaborate piping but consists of a dozen booths around the wall each, say, 5 ft. square. All the fixtures which are ordinarily sold may be divided into about a dozen classes as far as lighting principles are concerned; these are semi-indirect bowls, indirect bowls, brackets, showers, portables, etc. Each may be demonstrated separately in its own booth. On the table in the center of the room may be catalogs and samples of finish.

In the last third of the original room is the reduced display stock of well-chosen fixtures or headliners. If the fixture dealer is not convinced that he can support such demonstration rooms from the increased income—for his sales will be not only greater per customer but he should be able to get paid for lighting service either directly or indirectly—how about paying for the upkeep through the reduction in stock? The selling of lighting fixtures by way of demonstrating effects in this manner can be a combination of demonstrating the potentiality of lighting, of consulting catalogs and samples of finishes, and of displaying fixtures.

The writer, after years of comparing results of demonstration with those of verbal description of lighting possibilities, is convinced of the necessity for demonstrating lighting effects if the field of home-lighting, for example, is to develop as it should. A demonstration room was built at the Nila Research Laboratory, Cleveland, Ohio, and has been in operation more than a year. Its effectiveness has exceeded expectations.

Room Equipped with Many Kinds of Lighting

A room was built inside another and the interior was finished and furnished predominantly in warm grays. Only sufficient color and light and shade was introduced to eliminate monotony. This makes for an interior which is very sensitive to lighting effects. By a judicious use of portables, brackets, special fixtures, cove lighting, circuits, etc., a large number of distributions of light may be obtained without the suggestion of a display of fixtures. In addition to these, the charm of tinted light is demonstrated. Some idea of the room and its equipment for illustrating lighting effects may be had from the following descriptions:

1. An idea of the room as lighted

EXPOSITION AND HOUSEHOLD SHOW IN ST. LOUIS—IT WAS HERE THAT 50,000 SELECT HOUSEWIVES SAW EXHIBITS OF EVERY KIND OF GAS APPLIANCES ON SALE IN ST. LOUIS, MO.

from the cove. In the foreground is a special center fixture which has three fundamental outlets giving, respectively, direct, semi-indirect, and indirect lighting effects. Cove lighting (with three outlets) is emphasized only as a secondary lighting effect for the home but it has an important place in some fields of lighting. From this cove subdued light, tinted and untinted, may be obtained.

2. The result of a combination of direct and indirect lighting (with the bowl of low brightness) for the dining room and for library tables in some cases. The upward component, for example, may be of a warm tint. Various combinations of tints may be demonstrated. The coal fire in the grate is realistically produced with gas logs. Over the mantel in the central panel is a specially devised screen upon which lantern slides of other lighting possibilities are projected from the rear. This panel when unlighted appears of the same color and texture as the other surroundings of the room.

3. The effect of semi-indirect lighting. When the dining table is under consideration, the desirability of the effects described in the second and fourth instances, as compared with the first and third instances, is easily demonstrated. Not only lighting effects themselves may be shown in this room, but their appropriateness for various rooms or occasions may be strikingly demonstrated and discussed in a vivid manner.

4. Direct lighting of the dining table with a subdued tinted light from the cove.

5. Various effects with portables especially for the living room may be demonstrated. The lamp lighted in this instance has an indirect component which, when turned on, floods the living room with a lighting effect for some of the occasions found in the living room. This illustrates the possibilities of fixtures designed to provide some variety in lighting effect.

6. In order to simulate an ordinary interior, windows are necessary to complete the effect. It is well to demonstrate them as admitting artificial daylight or moonlight. They also illustrate that artificial lighting may be obtained in other ways than from so-called fixtures. Artificial skylights, windows, flower boxes, etc., may be mentioned in this connection.

Novelties in Bookcase Lighting and Lantern Projector

The bookcases and other details of the room are provided in order that no more than necessary be left to the imagination of the visitor. Various details of lighting principles are demonstrated in the bookcases. The use of various types of fixtures in other rooms in a home are readily demonstrated in this room.

By means of the available lighting effects and the lantern-slide projector, the possibilities in many other classes of interiors are demonstrated. The lantern-slide projector automatically handles seventy slides, projecting them from the rear upon the central panel over the fireplace, as described in the second instance. The slides may illustrate principles of light, color, lighting, vision and also actual installations in various types of interiors such as residences, clubs, hotels, restaurants, churches and theaters. Tinted slides are especially attractive. The central panel when the projector is not in operation appears gray like the other panels in brightness and color. Attention to this and many other detail aids considerably in increasing the effectiveness of the room for demonstrating lighting principles and effects and in awakening the visitor to the potentiality of lighting.

At best, these few descriptions do not illustrate the many lighting effects (both of distribution and of tint) which may be shown in a room of this character, but it may be said that the room has proved very satisfactory. It has provided the opportunity to note the reactions of hundreds of visitors not only to the lighting demonstrations but also to the many-sided discussion which is presented in connection with the lighting effects and in regard to the part which artificial lighting is able to play in contributing to the progress and happiness of mankind.

A large room has greater possibilities than a small one, but the fixture dealer or company salesroom could do much with a room 12 ft. by 18 ft. The writer would prefer one about 16 ft. by 24 ft. with a ceiling of about 9 ft.

In the room described the paneling was chosen because composition board was used. The windows swing inward. All-over floor covering of plain rose-taupe color is used and the walls and ceilings are painted with dull warm gray of three shades varying from nearly white for the ceiling to a moderate shade for the paneling. The upholstering is of a bluish shade which was chosen for the sake of contrast with the warm gray of the surroundings. The furniture is reed, painted in two tones of light warm gray. It is possible to get behind the walls and above the ceiling when changes or additions to the piping are desired.

Demonstration Has Valuable Educational Force

The story that such a room can adequately illustrate has been barely touched upon in this article, but it can be stated with confidence gained through experience with dealers, contractors, architects, decorators, salesmen, householders, etc., in this room, that such a demonstration is a valuable educational selling force. It shows the potentiality of lighting and increases the force of verbal description manifold.

North Texas Cities Form Natural Gas Association

The Natural Gas Association of North Texas has been formed in Dallas, Tex., by city officials and their representatives from north Texas cities using natural gas. A central committee was appointed to carry on negotiations through the coming year looking to securing for all north Texas cities, through co-ordinated action, increased gas supply for next winter.

It was the opinion of J. C. Lord, city commissioner of Fort Worth, that any action attempted by the association for immediate relief would be useless. He declared that north Texas can do nothing until E. W. Shaw and P. L. Ports complete their reports on the gas situation, after which it will be possible for the cities interested, working as a unit, to obtain increased supplies if such supplies are found to exist.

The officers of the eorganization are: Mayor Frank W. Wozencraft, president; Mayor E. McCollough of Waco, vice-president; Mrs. A. C. Schoppaul, of Gainesville, second vice-president, and Mayor H. A. Finch of McKinney, secretary. Cities represented were Arlington, Bowie, Fort Worth, Denison, Denton, Gainesville, McKinney, Sherman, Wichita Falls, Waco, Decatur and Strawn.

The central committee is composed of Commissioner Hal Moseley of Dallas, Commissioner J. C. Lord of Fort Worth, Mayor Finch of McKinney, Walter Kurley, public utilities commissioner of Wichita Falls, and Mayor Wozencraft, ex-officio chairman.

One Way for Gas Companies to Increase Earnings

That Way Is to Develop Strong Sales and Strong Advertising Departments

By J. E. BULLARD

All public utility companies can well learn a lesson from the experience of the traction companies. There is scarcely a traction company in the country that is making money. A goodly number of them are being operated in a receivership. Traction company stock that might have sold for 100 or more five years ago is now selling for twenty-five. Thousands of miles of track have been abandoned. Some of this track has been torn up. The future of the whole industry is uncertain.

The problems which have faced the traction companies have been more serious than those which have faced other utility companies, partly for the reason that a larger percentage of the traction company's operating expenses are for labor than is the case with most utility companies. When wages have increased, operating expenses have gone up and it has not been easy to increase carfares in proportion.

It has been lack of public confidence and lack of information in regard to the problem of the traction companies, however, which have been at the root of all the troubles that the traction companies have experienced. Had the public had perfect confidence in the companies and had it possessed sufficient information in regard to the problems with which the traction companies have been faced, there is no reason to believe that it would have been anywhere nearly as difficult to solve these problems. The majority of the people are willing to be fair. When they know the facts they are usually willing to do their part.

Those public utility companies which have taken the public into their confidence have not experienced as much trouble during the past few years as those which have not. Traction companies in the past have not, as a rule, been very liberal advertisers. They have not maintained highly trained sales departments. Most of the information that has been given to the public in regard to them has been that given by politicians, agitators, and other people who expected to profit personally from their attacks. That which people read in the newspapers in regard to the companies, has been for the most part news about pools and combinations that have resulted in great profits to the manipulators. The traction companies have not felt called upon to present their side so the public has been told only the bad things about the companies.

It makes little difference how upright an individual may be, if nothing is told about him but the bad things, his reputation will not be of the best. It is the same way with a corporation or an industry. If all the publicity is left to the enemies of that corporation or industry and the corporation or industry makes no continued effort to present the real facts, people are sooner or later going to believe that what the enemies say is true.

It is human nature to defend one's character. If one does not do so, it is taken for granted that anything said is true. It is exactly the same with groups of individuals whether these groups make up a corporation or an industry.

Had the traction companies advertised extensively and employed competent sales forces to give the public the information it would have to have in order to believe in the integrity of the companies the present troubles would be very much less than they are.

To-day there are gas companies that are not able to make a profit on the gas that they sell. There are others that for one reason or another do not wish to increase their business at the present time. The most natural thing in the world to do in such cases is to disband the sales forces and discontinue the advertising appropriation. This course saves money for the moment, but there is grave danger that it will build up trouble for the future.

No concern, no business, no industry can stand still. It either goes forward or backward. The gas company that attempts to mark time until times become normal again runs the risk of going backward. The less it does and the less it tells the public about itself, the more people are likely to become suspicious of it.

One way for a gas company to make certain of increased earnings is to develop a strong sales and advertising department and use such a department or such departments, if the company is so large that two departments must be formed, for bringing about relations between the public and the company which will make profits possible. A good sales and advertising department can do other work than merely sell gas ranges. It can also sell the service the company is rendering to the public.

Salesmanship has been defined as persuading others to give a valuable consideration for that which you have for sale. The gas industry has a service for sale. This service consists of manufacturing and distributing gas to the people in the community. The most important part of the service, in fact we might say the real service consists of always being ready to deliver the gas to anyone at any time. This service is worth a great deal to the public and it is something about which it knows little.

Few know how much it costs to render this service. Few realize how important it is. It might be well to teach people more about it.

In the past a great part of the sales effort of gas companies has been directed towards selling appliances in which gas can be used. Little effort has been directed towards selling the actual service that the company renders. It has been possible to raise the prices of appliances, those things back of which the company has put its sales effort.

That which it has been hard to raise has been the rates charged for the service, back of which the company has not put so much sales effort. To be sure, all that has been necessary in case of appliances has been merely raising the prices while rates cannot be raised until both the public and the public service commissioners are convinced that they should be raised. Merely convincing the commissioners is not enough. If they are convinced and allow an increase as great as their judgment dictates, it may only result in so much public dissatisfaction that these commissioners will be charged with all sorts of motives and sooner or later new commissioners more completely influenced by public opinion will replace them. The commissioners cannot and should not be expected to

sell their opinions to the public. It is part of the business of the gas company to sell its service to the public and by selling its service is meant demonstrating the value of the service and the cost of it to a degree that the public will be willing to pay rates that will yield a profit.

There is not a company in the country which could not profit by this kind of salesmanship. Had it been used before State and municipal commissions became popular there is every reason to believe that there never would have been any State and municipal commissions. Enough of this kind of salesmanship has already been used to prevent a wide adoption, up to date, of municipal ownership and operation.

This kind of salesmanship requires real salesmen and real advertising men. This kind of salesmanship pays, because just so sure as it is used a company that is now losing money can be changed to one that is making money. Modern business has demonstrated that the only way that any concern can solve its relations with the public to everyone's satisfaction is through printed and personal salesmanship.

Unless a gas company that is not making money adopts aggressive sales methods it may end in a receivership. If it does adopt aggressive sales methods, it can solve its present problems and secure from the public the rate adjustments and possibly even tax exemptions required to satisfy the investors in the company, the employees, and the consumers.

It is these facts that make it so important to strengthen the sales departments now instead of discontinuing them. We have not yet reached normal times. We are not even certain that there are not worse conditions ahead of us than those that we have left behind. The only safe course is to strengthen present positions, to make the companies strong now. To do this requires aggressive sales methods by strong aggressive sales departments that are backed by the company itself. It will do no good for the sales department to go out and sell one thing if the company delivers another. It will do no good for the sales force to sell the public the idea that the integrity of the company and its officials is above suspicion unless the company and the officials prove themselves to be so.

Attempting to secure desired results in any other way than through real salesmanship that is backed by the concern always ends in failure. Little permanent advantage can be gained by working through politicians. History has demonstrated this. Any legitimate object, however, can be gained through real sales effort. The modern business world furnishes example after example to demonstrate that this is true. Fundamentally, the problems of public utility companies are no different from those of any other business organization. It is only in detail that they differ. Success, that is permanent success in a big way, depends upon creating in the public confidence in the concern and in bringing about favorable public relations. It is this very thing that gas companies need most to do at the present time.

Logan Natural Gas Company Teaching Conservation

The Logan Natural Gas Company is making an endeavor to practically aid every gas consumer in the State of Ohio in the saving of gas by giving free demonstrations of a super-imposing gas burner upon an old burner of a kitchen gas range which brings the gas flame near the cooking utensil, obtaining satisfactory results with a minimum supply of gas. These demonstrations are made to anyone interested in saving the gas, which also, at the same time, saves the consumer's money. Notice has been sent out that any gas range with an old-style burner low and with the flame a distance from the bottom of the cooking utensil can have this burner adjusted, showing the difference of time it takes water to boil on the two burners.

The general manager of the company states that these demonstrating tests are being made by the company everywhere in order to teach conservation of gas by any possible route necessary.

All Stoves to Be Adjusted for Gas Conservation

In Dallas, Tex., no more stoves will be sold by hardware dealers until they have been readjusted to conserve gas. Mayor Frank W. Wozencraft of Dallas warned the citizens against purchasing stoves that have not been readjusted. Samuel S. Wyer, of the Bureau of Mines, said an arrangement with Dallas dealers has been effected and efforts are being made to induce other hardware men over north Texas to follow this example.

Through the State educational institutions, the public schools and the Housewives' Chamber of Commerce the lessons in gas conservation taught here by Miss Olga Elifretz, of the Bureau of Mines, are to be taken to every city where natural gas is used, it was announced following a conference held recently. The State home economics committee, appointed last fall by Miss Annie Webb Blanton, State Superintendent of Public Instruction, will take the lead in this work.

Peoples Company Model Rest Room Gaining Popularity

The beautifully appointed "Chicago Model Rest Room" of the Peoples Gas Light & Coke Company is a big success. In the short time of its operation it has gained remarkable popularity.

The rest room is in the basement of the gas building where the weary shopper may find stationery, telephones, and, most of all, a distinct home-like atmosphere right in the heart of America's second largest city.

The room is fitted with large, comfortable chairs, davenports, tempting reading tables, soft lights and radiant fires. Good taste and artistic arrangement dominate the room.

Directly across the floor from this rest room, and seemingly a part of a cozy home is a completely furnished dining room, kitchen and laundry. Here Mrs. Housewife is interested to see gas appliances in actual use. A batch of real cookies are being made by a very competent woman. A business-like ironing board and gas iron stand over in one corner with just the proper trimmings to catch the eye.

Then there is the laundry. And laundry work is no longer the cause of blue days, for the gas washer and the gas mangle are perfect workmen, and operate at small cost. White-capped attendants explain and demonstrate the simple operation of the various gas appliances.

The innovation has caused wide comment in Chicago. Its value as an advertising medium is just beginning to be realized.

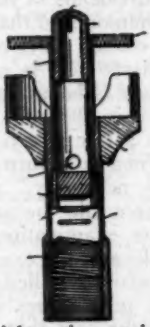
MASSACHUSETTS GAS COMPANIES' subsidiary companies' net earnings available for dividends for December were $354,073, an increase of $183,964, or 108.14 per cent, compared with the corresponding month a year ago.

PATENTS PERTINENT TO GAS INDUSTRY

Automatic Cut-Off Gas Burner

Patent No. 1,326,550; described in Patent Office *Gazette*, Dec. 30, 1919, page 785. George B. Tryon, Derby, Conn. Filed Aug. 16, 1919. Serial No. 318,021. 3 Claims. (Cl. 67—116.)

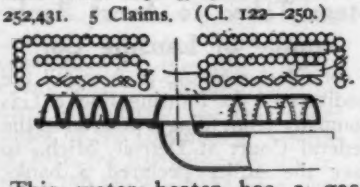
This is a combination of a burn-



er tube with a tip carrier mounted in the upper end thereof. The lower end of the tip carrier coacts with the burner tube in order to close the passage between them. There is a port in the tip carrier and an expansible member secured to the upper end of the tip carrier. Another expansible member is secured to the upper end of the tip carrier. Lastly, there is an abutment secured to and projecting above the burner tube with which the expansible member may engage.

Gas-Fired Water Heater or Steam Generator

Patent No. 1,328,856; described in Patent Office *Gazette*, Jan. 27, 1920, page 498. Walter Martin Taylor, London, England. Filed Sept. 3, 1918. Serial No. 252,431. 5 Claims. (Cl. 122—250.)

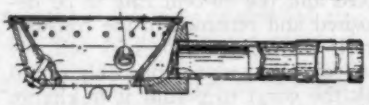


This water heater has a gas burner which consists of a series of spiral tube successively increasing periphery. These tubes are co-axially arranged in a horizontal plane to form a broken spiral. Each tube is one convolution in length and is provided along its crown with a line of openings. A central chamber is arranged co-axially with the spiral tubes. A gas supply conduit communicates with the interior of the chamber. There are a plurality of radially disposed tubular arms connecting the central chamber and the spiral tubes. There is a water coil consisting of a plurality of coiled pipe units, superimposed one above the other. The lowermost pipe unit is located above the gas burner, and consists of a single pipe spirally coiled and arranged to make two circuits in succession above each of the said spiral tubes. This causes the water to circulate twice over each spiral tube, continuously in one direction from one end of the pipe to the other.

Gas Burner

Patent No. 1,329,096; described in Patent Office *Gazette*, Jan. 27, 1920, page 543. Harry A. Robinson, Mansfield, Ohio, assignor to the Eclipse Stove Company, Mansfield, Ohio, a corporation of Ohio. Filed April 17, 1919. Serial No. 290,757. 5 Claims. (Cl. 158—116.)

The burner head of this gas

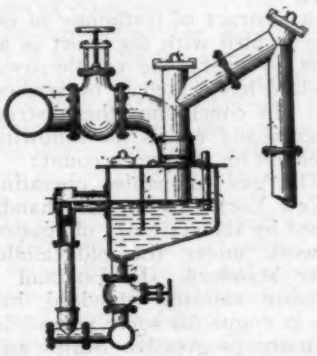


burner is made up of inner and outer spaced shells, conjointly forming an annular upwardly tapered gas chamber. The inner shell is provided with gas jet openings which communicate with the upwardly tapered portion of the gas chamber. The outer shell is provided with a bottom port opening within the inner periphery of the inner shell. Fastening elements extend transversely and diagonally through the base portions of the inner and outer shells, clamping them together, and a feed pipe communicates with the annular gas chamber.

Apparatus for Maintaining Predetermined Pressure Conditions in Gas Retorts

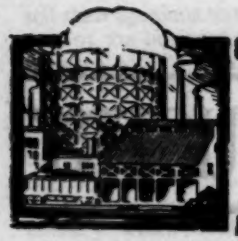
Patent No. 1,329,129; described in Patent Office Gazette, Jan. 27, 1920, page 550. Archibald Alexander Macintosh, St. Kilda, and William Henry Hunt, Melbourne, Victoria, Australia. Filed April 2, 1917. Serial No. 159,283. 4 Claims. (Cl. 48—171.)

This apparatus comprises a re-

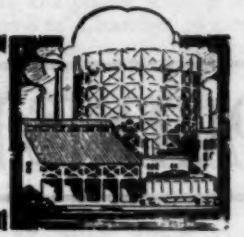


ceptacle adapted to contain a liquid, having two compartments connected adjacent the bottom of the receptacle. An intake pipe leads into and extends below the liquid level in the first compartment of the receptacle. An outlet pipe leads from the first compartment of the receptacle. There is a device associated with the receptacle that is adapted to admit air to and permit the escape of liquid from the upper portion of the second compartment in the receptacle. By this means the atmospheric pressure is maintained in both compartments in the receptacle.

NORTHERN INDIANA GAS & ELECTRIC COMPANY, of Fort Wayne, Ind., on Feb. 1 moved its office from the Ellis Building to the annex of the Murray Hotel on Third Street.



NEWS OF THE GAS INDUSTRY



N. Y. Consolidated Endeavoring to Have British Thermal Unit Adopted

The Consolidated Gas Company of New York is endeavoring to have the B.t.u. standard of gas measurement adopted in New York rather than the candle-power standard now in use. The company has explained to the commission that the B.t.u. system is now generally favored in all countries.

Justice Greenbaum recently ruled the company would have to supply gas of 22 c.p. before it would have standing in any suit in his court.

An abstract of testimony of experts is filed with the court in an effort to prove the candle-power standard has ceased to be serviceable. In concluding the abstract the company enters the following statement on its own account:

"The gas companies operating in New York City are still handicapped by the statutory obligation to work under the old candle-power standard. In England a moderate calorific standard has been in vogue for some years. In the more progressive States and cities in this country the heat-unit standard is rapidly receiving the sanction of the public authorities, and it is to be hoped that soon a change from a candle-power to a calorific standard will be authorized for New York."

Gas Mixing Ordinance Passed in Louisville

An ordinance has been passed by the Louisville, Ky., Board of Councilmen, effective as of Feb. 1, providing for the furnishing of artificial gas mixed with the natural gas, whenever the natural gas supply of the Louisville Gas & Electric Company fails in a cold weather period.

The gas-mixing ordinance ratifies the contract of Mayor Smith and is effective until April 1 next. Artificial gas may be furnished in amount of not more than 3,500,000 cu. ft. daily in time of emergency need and then only after 12,000,000 cu. ft. of natural gas has been used on the particular day on which artificial gas is required. No additional charges will be allowed except in case of consumption of 100,000 cu. ft. is used monthly.

Worcester Strike Over

The strike in the Worcester, Mass., gas plant, which was started last September, has been declared ended at a conference between representatives of the company and the employees.

Brooklyn Union Wins Temporary Injunction

The Brooklyn Union Gas Company, which furnishes about one-third of the gas consumed in Brooklyn, has obtained a preliminary injunction from Federal Judges Ward, Mayer, and Knox, restraining State, city and county officials from seeking to enforce the 80-cent gas law. The injunction is to run until Aug. 1, when it may be renewed if the suit of the company to have the statutory rate declared unconstitutional, because it is confiscatory, is not decided.

The company can establish a rate, to be approved by the court, which will net a "fair return" on the investment, the difference between the price fixed and the 80-cent rate to be deposited and returned to the consumers if the company loses its suit. It was said the company probably would ask the court to permit it to charge $1.05 a 1,000 cu. ft., and that the New York Public Service Commission would contend that the court has no right to fix rates, as such right is conferred solely upon the commission.

The Court stated that the penalty for violation of the 80-cent law was so great as to threaten annihilation, which was of itself unconstitutional, and that the plea of the Public Service Commission that the action should be dismissed because the plaintiff did not come into court with clean hands because it had sold gas of less than the candle-power fixed by law, should not be considered because this alleged violation of law was due to the fact that the Government had decreased the candle-power by abstracting from the gas toluol needed for war purposes.

Concerning the contention of the commission that the company had earned large dividends in years prior to 1918, the opinion said that if large returns were earned they were legal, and that the issue now is whether a sufficient return is being earned. It was stated that in 1918 the company failed to earn a fair return and that in 1919 it earned no return at all.

"It will be necessary," read the opinion, "to ascertain the actual figures upon the examination of the plaintiff's books and the examination of witnesses before a skilled master."

During the proceedings attention was called to the fact that in other cases where an excess charge was made the company benefited by it, even though it lost the suit, because of the death or disappearance of many consumers overcharged. Replying to this statement the opinion said that it was much more certain that the company would not be able to recover the amount due it if the statutory rate should be held to be confiscatory.

Briefs prepared by the Public Service Commission stated that the company bought the franchises and property of several companies for which it paid shares of capital stock of par value of $15,000,000 and in bonds of par value of $10,000,000 secured by a first mortgage, and that $3,900,000 in bonds was reserved.

Steps Taken to Avert Bankruptcy of Lansing Co.

As a last measure to forestall the creditors of the Lansing Fuel & Gas Company from filing a petition in the Federal Court at Detroit, Mich., to have the utility declared a bankrupt, the city council has taken the extraordinary step of passing an ordinance declaring a forfeiture of the gas company's franchise.

In compliance with a resolution City Attorney Rhoads and attorneys for the company have filed a petition with the Michigan Public Utilities Commission asking that authority to fix a rate and establish at once all regulations and requirements under which the company shall operate.

New Officers Elected

At the annual meeting of the stockholders of the Heights Gas Company, of Muskegon, Mich., which was held in the offices of the company recently, the following officers were re-elected.

President and manager, A. E. Dunn; vice-president, C. W. B. Cunningham; secretary, Adam Pyle, Jr.; treasurer, Rr. R. I. Busard; directors, A. E. Dunn, C. W. B. Cunningham, W. J. Carl and Adam Pyle, Jr.

Iroquois Company Asks Approval of Merger

The Iroquois Natural Gas Company, of Buffalo, N. Y., has made application to the New York Public Service Commission, Second District, for approval to the merger by the Iroquois Company with the Erie County Natural Gas Fuel Company, Ltd., incorporated in 1889 for the purpose of piping gas through the streets in Buffalo for heating purposes.

The petition states that the Erie County Natural Gas Fuel Company from the time of its incorporation and down to about 1896 was engaged in distributing natural gas in a portion of Buffalo under franchises granted by the city which are unlimited as to time and to territory. The gas supply of the company, it is stated, failed in 1896 and it was unable to furnish service to its customers, and the company leased its plant for the distribution of gas to the Buffalo Natural Gas Fuel Company, predecessor in interest of the Iroquois Natural Gas Fuel Company, and that since about June 1, 1897, the Buffalo Natural Gas Fuel Company have operated the distributing plant of the Erie County company.

The petition states that the stock authorized under the certificate of incorporation of the Erie County company was $20,000 and later increased to $500,000 and that under an order of the commission November 9, 1918, the Iroquois company acquired 4,750 shares of the Erie company, the entire capital stock of the company of which the Iroquois company is now the owner.

Grand Rapids Company Officers Re-elected

A. P. Lathrop, president of the American Light & Traction Company, attended the annual meeting of the Grand Rapids Gas Light Company in Grand Rapids, Mich. The following officers of the company were re-elected: President, Emerson McMillin; vice-presidents, A. P. Lathrop and John T. Young; directors, the officers and Henry Idema, L. H. Withey, William H. Anderson, Henry Sullivan and Thomas J. O'Brien; secretary and assistant treasurer, Glenn R. Chamberlain; treasurer and assistant secretary, John A. Hulswit.

Hartford Company Holds Annual Meeting

The stockholders of the Hartford (Conn.) City Gas Light Company at their recent annual meeting re-elected the board of directors, consisting of Judge E. B. Bennett, Francis R. Cooley, Morgan G. Bulkeley, Jr., John T. Robinson, Frank C. Sumner, James H. Knight and Philip Roberts, all of Hartford, and J. J. Bodell and Louis C. Gerry, of Providence, R. I.

The directors met after the stockholders' meeting, and re-elected the following staff of officers: President, Judge E. B. Bennett; vice-president, Francis R. Cooley; secretary and treasurer, John A. McArthur.

New Company Buys Out Three Old Companies

Financial credentials of the newly formed Kansas City Gas Company, which recently completed an agreement for the purchase of the Kansas City Gas Company, the Kansas City Missouri Gas Company and the Wyandotte County Gas Company, have presented in the form of detailed exhibits with application for approval of the merger, to H. J. Busby and Edward Flad, members of the Missouri Public Service Commission, in session at the Hotel Baltimore in Kansas City, Mo.

E. M. Harber, city counselor, is favorable to the new management of the gas property but asked for time to examine in detail the exhibits. Later the commission will take up an application from the new concern for a change in rates.

In its deal with the old companies the new concern has arranged to clear the indebtedness of the old companies and purchase more than a million dollars of the preferred stock.

Western States Company Allowed Time Extension on Stock Selling

The Western States Gas & Electric Company, which last February obtained an order from the California Railroad Commission authorizing issuance of $1,178,000 preferred stock, has been granted by the commission an extension of the time allowed for the sale of the stock. The extension carried the order to Dec. 31, 1920. The company operates in Stockton, Eureka and Richmond, Cal.

Pacific Gas & Electric Asks Rate Increase

Application for authority to increase its rates for gas in San Francisco and throughout Central California was sought from the State Railroad Commission by the Pacific Gas & Electric Company.

The proposed increase for the San Francisco district will amount to about 5 cents a 1,000 cu. ft. for all classes of consumers.

The application for increase in rates is based on the assertion that the present rates, because of the high cost of material and labor and the increase in the value of the company's plants due to additions and betterments do not yield an adequate return.

The proposed new rate will mean an increase of 2 cents a 1,000 cu. ft. for the small consumers and about 5 cents for the large in Oakland, Berkeley and Alameda district.

In the outer Alameda County district, which includes Hayward, San Leandro and Richmond, the proposed increase will amount to about 20 cents a 1,000 cu. ft.

Increases proposed in other districts are: Marin County, 40 cents; Sacramento, Fresno, San Jose, and Redwood City, 20 cents; Chico, Napa, Petaluma, Santa Rosa, Woodland and Marysville, 30 cents for small consumers and 10 cents for large consumers; Los Gatos, 55 cents for the small consumer and 20 cents for the large consumer.

Increases at other points range from 10 cents to 60 cents a 1,000 ft.

Long Beach Company Rates Increased

The Long Beach Gas Company, Inc., under a tariff filed with the New York Public Service Commission of the Second District, and proposed as effective in Long

A NEW SERIES OF ADVERTISING THAT THE ENTERPRISING MR. HARTOG, OF PORTLAND (ORE.) GAS & COKE COMPANY, HAS LAUNCHED

Beach and the town of Hempstead, Nassau County, L. I., on Feb. 15 will change its lighting and fuel rates from $1 a month service charges, with block rates for gas consumed varying from $2 per 1,000 cu. ft. for the first 5,000 cu. ft. to $1.50 per 1,000 cu. ft. for all over 10,000 cu. ft. a month, to a service charge of $1 a month plus $2 per 1,000 cu. ft. for all gas consumed. For hotels and restaurants with an average minimum monthly consumption of 30,000 cu. ft. there will be a $1.50 rate, plus $1 service charge; gas for general heating, average minimum monthly consumption of 12,000 cu. ft., $1 per 1,000 cu. ft., with $1 service charge. Installation connection charges are also provided.

25,000,000 Cu. Ft. from Gas Well Wasted Daily for Three Years

The Texas Railroad Commission has ordered the White Point gas well shut in. This large gasser is near Corpus Christi and has been wasting over 25,000,000 cu. ft. of gas per day for the greater part of three years.

Court Reaches Decision in Kings County Company 80-Cent Gas Rate Case

Justice Greenbaum in the Supreme Court, after a hearing that occupied eighty-three court days, denied the application of the Kings County (N. Y.) Lighting Company for a permanent injunction restraining the Attorney General, the Public Service Commission and the City of New York from enforcing the 80-cent gas rate against the company.

Justice Greenbaum held the company failed to show that the rate fixed by the Legislature in 1916 was confiscatory, the ground on which the proceeding was brought. A temporary injunction is now in effect under which the Kings County Lighting Company is charging 95 cents a 1,000 cu. ft.

Pending the final termination of the court proceeding, which has been going on since 1916, the company is using the extra 15 cents charged above the statutory rate, and has deposited a bond with the Empire Trust Company to guarantee a refund to gas consumers in case the 80-cent rate is upheld. This fund is said to amount to about $400,000 at the present time.

In his decision Justice Greenbaum said that his denial of the company's application was without prejudice to a renewal of the proceeding after the company has experimented with the 80-cent rate. An appeal to the Appellate Division is certain and the end of the litigation is certain unless the company decides to test its ability to supply gas at the 80-cent rate and, failing, renews its motion for an injunction.

The Kings County Lighting Company, now supplying 34,681 consumers in the 30th and 31st wards of Brooklyn, is a successor of the Kings County Gas & Illuminating Company. Justice Greenbaum pointed out that the present company in 1918 supplied gas that was considerably under the legal standard of candle-power. The business of the company undoubtedly would have been larger, the court suggested, if the company had furnished gas of the standard fixed by law.

"In view of these facts," said Justice Greenbaum, "and in the absence of any explanation of this seemingly flagrant violation of the law, the conclusion seems to be inevitable that the plaintiff's violation of the law was deliberate."

This failure of the company to supply a standard quality of gas, said the Justice, should be sufficient to deny it equitable relief, as "observance of the law is a cardinal principle which is obligatory upon him who seeks judgment in equity."

In another portion of his decision, Justice Greenbaum said "the unsatisfactory character of so-called expert opinion on the valuation of a hypothetically reproduced plant at a given time must be apparent to every one who has had experience with that kind of testimony. The court has therefore taken into consideration in determining the present value of the plaintiff's business both the original and estimated reproduction cost of construction. It is thus clearly established that since the inception of the plaintiff, it has realized a substantial income and has been fully compensated for the expenses incurred in developing its business and that it would therefore not be entitled to now add anything for 'going value.'"

The city's expert estimated the depreciation in the plant of the Kings County Company, excluding the land, at $461,728 for seventeen years from